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Predictability and control are sought by every physician, clinician and researcher. Knowledge of the predictable results of advice and medication and control of pathological conditions are goals shared by all professionals in the human care disciplines. These professional goals reflect Western man's love affair with rationality. When he tasted the comfort and security produced by his rational powers controlling physical forces and by projecting the results of his intervention into the largely chaotic and uncontrollable world, man became fascinated with control and predictability.

Western man has relentlessly expanded his areas of control and sharpened his instruments of predictability. When one area of life such as shelter, food, communication, etc. became more manageable and predictable, he left the refinement of control and prediction to technicians and pushed on to new areas. Recently man has discovered the prospects for control in the biomedical field of genetics. From the facile pens of popular authors flow visions of programmed progeny. They see generations of men who possess carefully selected intellectual, emotional and physical character-

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istics. However, just as facilely, from the pens of other authors loom spectacles of hideous consequences of genetic control to dampen such unbridled enthusiasms over genetic manipulation. They see visions of generations of Hitlerian dictators who continue in power by producing ultra-loyal cloned subjects.

As could be expected, the different images of the results of genetic control stirred serious debate over the ethics of genetic control. The debate over whether or not to endorse the continuing research and application of genetic information has raged for years among theologians, philosophers, ethicists, medical researchers, and physicians. When one listens to the ethical salvos from such pro-controllists as Muller, Lederberg, etc. and the answering salvos of the anti-controllists such as Ramsey and Kass, one hears a persistent voice which is almost lost in the echoing debate. It is the voice of realism, a common sense voice, which asks: is genetic control really probable or even possible given the state of the art and the unpredictability of human decision? The common sense argument proceeds from realism: "Let us not waste our time with such unrealistic and futuristic options. We should turn our attention to the actual problems of hunger, shelter, etc. which still remain man's great burden and threat."

While the common sense argument has the refreshing quality of realism and the exciting demand of contemporariness, this argument has an unfortunate naiveness. Man has looked beyond control of physical forces in terrestrial and extraterrestrial space to seek control of the psychological and intellectual forces in the inner space of man's mind and judgment. There are researchers who are convinced that control of the human mind and predictability in the area of human judgment will resolve numerous problems which they view as the result of ignorance, emotional aberration, or poor judgment.

Behavior Control

The ethical question has moved from the argument over the control of future generations by selecting their genetic qualities to the question of controlling the direction of mankind by means of physical control of the brain. The question is a very real one since, as Jose Delgado comments, the physical control of many brain functions by surgical or electronic means is a demonstrated fact.[1] Physical control of brain functioning is accomplished by either electrode implantation in brain centers and electronic signalling or by surgical intervention in the brain's neural centers and pathways. The surgical intervention is commonly called psychosurgery.

Motivated by the necessity of order and predictable behavior to produce social tranquillity, man has sought to control human be-

havior for centuries. He has devised various methods of controlling behavior. To some extent all of these methods of behavior control have been coercive, i.e., they either produced or threatened penalties for misbehavior and occasionally rewarded good behavior. Laws and sanctions, religious virtues and vices, psychological therapeutic procedures, behavioral conditioning learning theory, etc. have been created and perfected to control human behavior with a greater or lesser degree of effectiveness. Now man is on the brink of a greatly sophisticated type of behavior control: physical control of the organic substratum of the motivational and rational centers of man's mind, his brain.

Although the perfection of psychosurgical techniques is quite recent, the search for such surgical control of behavior began much earlier.[2] In 1870 Drs. Eduard Hitzig and Gustav Fritsch revealed their findings that a specific region in the anterior of the cerebral cortex of a dog controlled specific muscular movements. Their findings and the increasing refinement of surgical procedures and apparatus led to more sophisticated experimentation on animals and, in some cases, even on man. The first recorded account of applying stimulation directly to the human brain took place in 1874. Dr. Roberts Bartholow of Cincinnati had under his care a thirty year old mentally defective woman who had a cancer of the skull which produced a two inch hole in the posterior portion of her skull. Thus the brain was directly accessible to stimulation. Dr. Bartholow used a battery current to stimulate the exposed brain and recorded several physical and emotional responses of his patient.

Animal Surgery to Human Surgery

Animal experimentation continued through the early 1900's. The techniques of brain surgery became more efficient and sophisticated; and, more importantly, the functions of specific areas of animal brains were becoming identifiable. It was inevitable that clinical application of the knowledge and techniques of animal brain surgery would be made to human brain surgery. In 1935 experiments on monkeys and chimpanzees at Yale University performed by Dr. Carlyle Jacobsen were reported to the Second International Neurology Congress in London. The surgical destruction of the prefrontal area of the cerebral cortex of a chimpanzee named "Becky" produced a profound change in the chimpanzee's behavior. Becky's emotional outbursts of agitation and temper in situations of frustration disappeared. Instead, Becky exhibited calmness never seen before the operation. Dr. Egas Moniz of Portugal was impressed by Dr. Jacobsen's report. He inquired of Jacobsen about the possibility of using such surgical techniques to relieve anxiety states in man. Although Jacobsen demurred, Moniz was convinced the evidence was sufficient enough to at-

tempt such surgery on humans. On November 12, 1935 the first psychosurgical operation, a lobotomy, was performed in Lisbon upon a patient "who had proven refractory to other methods of treatment."

In 1936 lobotomy was introduced in the United States by Dr. Walter Freeman and Dr. James Watts of George Washington University, Washington, D.C. They developed a precision method which permitted severing of predetermined areas of the frontal lobes, instead of the relatively indiscriminate destruction of neural pathways produced by the Moniz type of lobotomy. Estimates are that between 1936 and the late 1950's approximately 40,000 lobotomies were performed in the United States alone. By the late 1950's the availability of a variety of psychoactive drugs, tranquillizers, stimulants, etc., and the frequent reports of undesirable side effects of psychosurgery resulted in a sharp decline in lobotomies.

However, it became evident that pharmacology had not provided the definitive answer to psychological illness. Depression, severe agitation, obsessive disorders, aggressive behavior and other conditions remained intractable. These conditions enkindled interest in psychosurgery again. Furthermore, the strides in surgical technique in reaching and destroying discreet areas of the brain made the prospect of surgical control of behavior all the more appealing.

Ehical Questions for Psychosurgery

The ethical questions that face us in the area of psychosurgery are: one, ought a surgeon operate to attempt control of a person's behavior; and, two, if so, under what conditions should one proceed with psychosurgery? First, some general comments on the question of psychosurgery as an ethical procedure. The goals of psychosurgery are of themselves laudable. One would like to alleviate the suffering caused by aggressive behavior or motor disabilities. There is little ethical disagreement with the intended goals of such control. However, as is the case in all human activity, the genuine intention to do a good thing does not always determine the rightness or wrongness of an action. The effects and consequences of psychosurgery on the individual and society are also critical to the ethical judgment. If one notes that psychosurgery seems to be a substantially distinctive type of behavior control, the ethical consequences becomes obvious. For example, whereas drug therapy and psychotherapy deeply affect the personality of the patient and even touch those who are closest to him, these procedures are basically reversible. This is not the case in psychosurgery. The unique nature of the brain cells does not permit regenerative action once damage is done. Psychosurgical techniques, however refined, destroy irrevocably the brain cells which form the physical substra-

tum of man's mind. Secondly, in many instances the discreet destruction of a particular section of the brain which has an influence on behavior involves destruction of healthy brain cells. Such a procedure effectively removes the normal functioning as well as the abnormal functions controlled by these healthy cells from the repertory of the individual. The ethical question arises: what right or under what conditions can we irrevocably remove or direct the behavior of man? Furthermore, we are dealing with areas of great unknowns because the complexity of brain functioning in any one single neural center is still much of a mystery. This fact only emphasizes the great care to be exercised when one contemplates employing psychosurgical techniques.

Social Implications

The social consequences of psychosurgery are also of great importance for an ethical judgment. One aspect which must be considered is society's need and interest in protection. Society has a stake in any attempt to improve the means of increasing the effectiveness in controlling dangerous or destructive behavior. Since psychosurgery seems to effectively limit aggressive and hostile behavior, society is interested. Also, society is interested in improving its more traditionally accepted means of behavior control, education and instruction. Researchers, such as Delgado, hold that the main implication of brain research for education (to which psychosurgery contributes) is that it will make available unique information about the neurological mechanisms which underlie learning. Also, it will help clarify the biological bases of the individual's potential.[3]

The goals of increased protection and educational improvement are again acceptable and ethical goals. However, other social implications are not so appealing. There are some who predict that such techniques could be employed by unscrupulous persons to control the political future of a people and thus restrict their freedom severely.[4] Their arguments induce the atmosphere of credulity when psychosurgical procedures are employed with electrode implantation and electronic stimulation of the brain centers. The more fanciful authors envision young children being fitted for electrodes which would control the information input and activities of the child. Although this possibility seems farfetched in terms of the present state of the art of brain control, it is not entirely outside of the realm of possibility. Consequently, it must be considered in the ethical judgment. Another social implication which overlaps individual implications is the role of consent. Responsible or adequate consent on the part of the patient to such a radical surgical operation is an elusive concept, too involved to treat here. But, socially speaking, the movement towards

protection which would permit the decision making power concerning psychosurgery to rest in a state agency would be a serious ethical question.

In response to the first ethical question, the author says "yes" a physician can recommend psychosurgical procedures in specific cases and under certain conditions. First of all, adequate or sufficient consent must be obtained from the patient himself or those responsible for him. The presence of such consent is difficult to ascertain concretely. Until more adequate data and guidelines for consent from persons afflicted with severe psychic disturbances is available, the physician must operate under the guidance of the reasonable man principle. He will attempt to ascertain what a reasonable and just man would judge in this case. Secondly, the psychosurgical procedure must be a last resort procedure, i.e., one considered only after all other means to induce adequate control have failed. Thirdly, the psychic condition must be such that the patient's behavior is severely dangerous to himself, or those around him. Fourthly, the schedule of treatments or psychosurgical procedures must correspond to the degree or reversibility (i.e., the most reversible first) and to the least potentially harmful to the psychological structure of the patient. Finally, in all considerations the primary concern must be respect for the person of the patient. Only when his behavior seriously threatens the safety of himself or others can others step in to attempt control.

The Future of Man

Two Christian and humanistic themes are critical to arriving at an ethically responsible judgment on the issue of psychosurgery: man's responsibility to shape the future; and, the meaning of man's future. Since man is the only creature known who possesses the ability to shape and direct the course of human history, he has a great responsibility for the future of man. Brain control and psychosurgery open the possibility of a unique control of the direction of man himself as a rational emotive creature. This possibility makes him face the question of deciding how he will respect the given state of man and yet positively direct man's future. If he looks exclusively to control and predictability as his guiding principles, he will neglect the spiritual realities of man's freedom and dignity. From a humanistic viewpoint freedom and dignity are interrelated and from the humanness of man, i.e., without freedom man loses his dignity as man; and man's dignity is his freedom. According to Christian tradition, both human dignity and freedom are rooted in man's creation by a personal God. Furthermore, both Christianity and humanism agree that whatever degree of freedom and dignity is enjoyed by men today has been attained only after great effort and is at best tenuously pos-

sessed. Interference with human freedom and choice by psychosurgery could violate values crucial to the preservation of human dignity; or, at least place in jeopardy the continued expansion and deepening of these values. It is in view of these general principles that the ethical judgment is made that psychosurgical procedures be employed only when there is serious conflict between freedoms which would threaten the dignity of the individual or the freedom of the society.

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